

WHAT IS CLAIMED IS:

1. A linear motor comprising:
a core member;
a coil obtained by winding a foil-like conductor
5 having an insulating layer around said core member in a
multilayered structure; and
a coil fixing portion fixing said coil,
wherein said coil is fixed to said coil fixing
portion by using said core member.
- 10 2. The motor according to claim 1, wherein said core
member is formed from an insulating material.
3. The motor according to claim 1, wherein said core
member is formed from a material having a low thermal
conductivity.
- 15 4. The motor according to claim 1, wherein said core
member is formed from the same material as a material
of said coil fixing portion or a material having
substantially the same linear expansion coefficient.
5. The motor according to claim 1, wherein said core
20 member is formed from a ceramic.
6. The motor according to claim 1, wherein said core
member is formed from a resin material.
7. The motor according to claim 6, wherein said core
member is annular and is fixed by being fitted on said
25 coil fixing portion.
8. The motor according to claim 1, wherein an outer
circumferential surface of said coil wound with the

foil-like conductor in the multilayered structure is covered with an electrically insulating material.

9. The motor according to claim 1, wherein said coil fixing portion is shaped such that an area in a
5 direction in which a large force is received under influence of a magnetic field is larger than an area in a direction in which a small force is received.

10. The motor according to claim 1, wherein said core member also serves as a winding jig used to form a coil.

10 11. A method of manufacturing a linear motor, comprising:

a step of causing a core member of the linear motor to serve as a winding jig and winding a foil-like conductor around the core member; and

15 a step of manufacturing the linear motor by using the core member as part of a coil after the winding step,

wherein the linear motor includes

a core member,

20 a coil obtained by winding the foil-like conductor having an insulating layer around the core member in a multilayered structure, and

a coil fixing portion fixing the coil, and

25 the coil is fixed to the coil fixing portion by using the core member.

12. An exposure apparatus comprising:

a reticle stage scanning a reticle;

manufacturing a semiconductor device by using the plurality of semiconductor manufacturing apparatuses, wherein the exposure apparatus includes a reticle stage scanning a reticle;

5 a wafer stage scanning a wafer;

a projection optical system arranged so that the reticle scanned is projected on the wafer scanned via said optical unit; and

a linear motor being used in the apparatus having,
10 (i) a core member, (ii) a coil obtained by winding a foil-like conductor having an insulating layer around said core member in a multilayered structure; and (iii) a coil fixing portion fixing said coil, wherein said coil is fixed to said coil fixing portion by using said
15 core member.

16. The method according to claim 15, further comprising the steps of:

connecting the plurality of semiconductor manufacturing apparatuses via a local area network;

20 connecting the local area network to an external network outside the semiconductor manufacturing factory;

acquiring information about the exposure apparatus from a database on the external network by
25 using the local area network and the external network; and

controlling the exposure apparatus on the basis

of the acquired information.

17. The method according to claim 16, wherein a database provided by a vendor or user of the exposure apparatus is accessed via the external network, thereby obtaining maintenance information of the exposure apparatus by data communication, or data communication is performed between the semiconductor manufacturing factory and another semiconductor manufacturing factory via the external network, thereby performing production management.

18. A semiconductor manufacturing factory comprising:
a plurality of semiconductor manufacturing apparatuses including an exposure apparatus;
a local area network connecting said plurality of semiconductor manufacturing apparatuses; and
a gateway for allowing access to an external network outside the factory from said local area network and allowing communicating information about at least one of said plurality of semiconductor manufacturing apparatuses,

wherein the exposure apparatus includes
a reticle stage scanning a reticle;
a wafer stage scanning a wafer;
a projection optical system arranged so that the reticle scanned is projected on the wafer scanned via said optical unit; and
a linear motor being used in the apparatus having,

(i) a core member, (ii) a coil obtained by winding a foil-like conductor having an insulating layer around said core member in a multilayered structure; and (iii) a coil fixing portion fixing said coil, wherein said
5 coil is fixed to said coil fixing portion by using said core member.

19. A maintenance method for an exposure apparatus, comprising the steps of:

preparing a database for accumulating information
10 about maintenance of the exposure apparatus on an external network outside a factory in which an exposure apparatus is installed;

connecting the exposure apparatus to a local area network in the factory; and

15 maintaining the exposure apparatus on the basis of information accumulated in the database by using the external network and the local area network,

wherein the exposure apparatus includes

a reticle stage scanning a reticle;

20 a wafer stage scanning a wafer;

a projection optical system arranged so that the reticle scanned is projected on the wafer scanned via said optical unit; and

a linear motor being used in the apparatus having,

25 (i) a core member, (ii) a coil obtained by winding a foil-like conductor having an insulating layer around said core member in a multilayered structure; and (iii)

a coil fixing portion fixing said coil, wherein said coil is fixed to said coil fixing portion by using said core member.

20. The apparatus according to claim 12, wherein

5 the exposure apparatus further comprises a display for displaying maintenance information, a network interface connected to a computer network to communicate the maintenance information, and a computer for executing the communication by network software,

10 and

said display, said network interface, and said computer enable communicating maintenance information of the exposure apparatus via a computer network.

21. The apparatus according to claim 20, wherein the
15 network software provides on said display said user interface for accessing a maintenance database provided by a vendor or user of the exposure apparatus and connected to the external network outside a factory in which the exposure apparatus is installed, and
20 information is obtained from the database via the external network.